



**NTSB** National Transportation Safety Board

# Industry Safety Culture: The Regulator's Role

Presentation to:

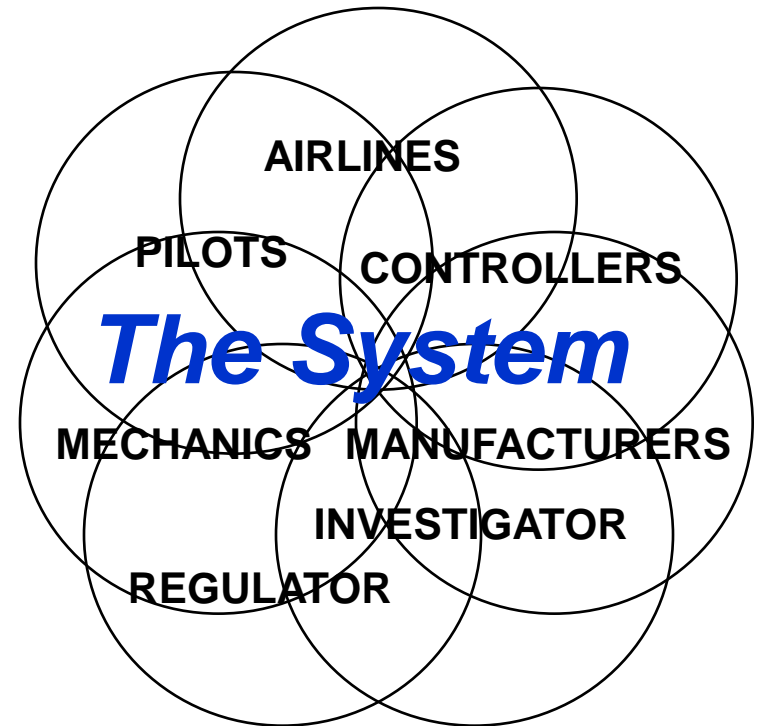
Future of High Reliability  
Organizations Symposium

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# The Context: Increasing Complexity

- **More System**  
*Interdependencies*
  - Large, complex, interactive system
  - Often tightly coupled
  - Hi-tech components
  - Continuous innovation
  - Ongoing evolution
- **Safety Issues Are More Likely to Involve**  
*Interactions Between Parts of the System*



# Effects of Increasing Complexity:

## **More** “Human Error” Because

- **System More Likely to be Error Prone**
- **Operators More Likely to Encounter Unanticipated Situations**
- **Operators More Likely to Encounter Situations in Which “By the Book” May Not Be Optimal (“workarounds”)**

# **The Result:**

## **Front-Line Staff Who Are**

- Highly Trained**
- Competent**
- Experienced,**
- Trying to Do the Right Thing, and**
- Proud of Doing It Well**

**. . . Yet They Still Commit**

**Inadvertent  
Human Errors**

# **A Solution: System Think**

***Understanding how a  
change in one subsystem  
of a complex system may  
affect other subsystems  
within that system***

# **“System Think” via Collaboration**

**Bringing all parts of a complex system together to collaboratively**

- **Identify potential issues**
- ***PRIORITIZE* the issues**
- **Develop solutions for the prioritized issues**
- **Evaluate whether the solutions are**
  - **Accomplishing the desired result, and**
  - **Not creating unintended consequences**



# Major Paradigm Shift

## How It Is Now . . .

You are highly trained

*and*

If you did as trained, you  
would not make mistakes

*so*

You weren't careful  
enough

*so*

You should be **PUNISHED!**

## How It Should Be . . .

You are human

*and*

Humans make mistakes

*so*

Let's *also* explore why the  
system allowed, or failed to  
accommodate, your mistake

*and*

Let's **IMPROVE THE SYSTEM!**

# Objectives:

**Make the System**

***(a) Less  
Error Prone***

**and**

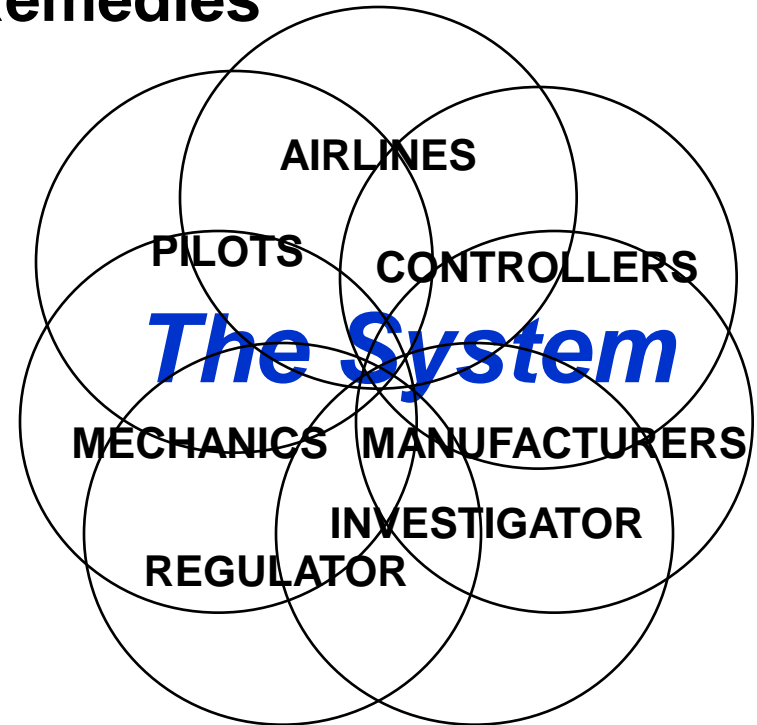
***(b) More  
Error Tolerant***



# Commercial Aviation Safety Team (CAST)

Engage All Participants In Identifying Problems and Developing and Evaluating Remedies

- Airlines
- Manufacturers
  - *With the systemwide effort*
  - *With their own end users*
- Air Traffic Organizations
- Labor
  - *Pilots*
  - *Mechanics*
  - *Air traffic controllers*
- Regulator



# Collaboration Success Story

**65% Decrease** in Fatal Accident Rate,  
1997 - 2007

largely because of  
***System Think***

fueled by  
***Proactive Safety  
Information Programs***

P.S. While safety was improved, ***productivity was also improved!***

P.P.S. This process ***did not generate a single new regulation!***

# Another Paradigm Shift

- **Old: The regulator identifies a problem, develops solutions**
  - Industry skeptical of regulator's understanding of the problem
  - Industry fights regulator's solution and/or implements it begrudgingly
- **New: Collaborative “System Think”**
  - Industry involved in identifying problem
  - Industry “buy-in” re solution because everyone had input, everyone's interests considered
  - Prompt and willing implementation . . . *and tweaking*
  - Solution probably more effective and efficient
  - Unintended consequences much less likely
  - May not necessitate new regulations



# Challenges of Collaboration

- Human nature: “I’m doing great . . . *the problem is everyone else*”
- Participants may have competing interests, e.g.,
  - Labor/management issues
  - May be potential co-defendants
- Regulator probably not welcome
- Not a democracy
  - Regulator must regulate
- Requires all to be willing, *in their enlightened self-interest*, to leave their “comfort zone” and think of the System

# Regulator Challenge No. 1

Recognize that

***compliance*** is very important,

but the regulator's objective should be

***reducing systemic risk***

# Regulator Challenge No. 2

**Emphasize the importance  
of System issues  
*in addition to (not instead of)*  
worker issues**

**Encourage and participate  
in industry-wide  
“System Think”**



# Regulator Challenge No. 3

**Facilitate better collection and analysis of information by:**

- **Establishing clear policies**  
*re protecting information*  
*and those who provide it*
- **Encouraging other industry participants**  
**to do the same**

**Thank You!!!**



*Questions?*